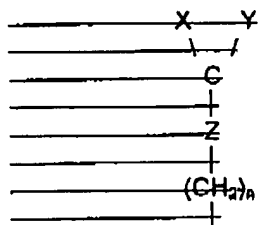


Ser. No. 09/308,150

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A purified peptide consisting of about 24 or fewer amino acids, reactive with autoimmune antibodies from a patient suffering from rheumatoid arthritis, where in the peptide is derived from a contiguous stretch of amino acid residues encoded by mRNA encoding an profilaggrin antigen recognized by autoimmune antibodies in a patient with rheumatoid arthritis; said mRNA comprising a codon for at least one arginine residue, wherein in the peptide at least one arginine residue encoded by said mRNA is a citrulline residue, in the peptide comprises a modified arginine residue with a side chain of the formula:



wherein

~~X is  $\text{NH}_2$ ,  $\text{CH}_3$ ,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$ ;~~

~~Y is O, NH,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$ ;~~

~~Z is O, NH or  $\text{CH}_2$ ; and~~

~~n is 2, 3 or 4, on the condition that when X =  $\text{NH}_2$  and Z = NH, Y is not NH.~~

2. (Cancelled)

3. (Cancelled)

Ser. No 09/308,150

4. (previously amended) A peptide according to claim 1 wherein the peptide consists of a linear peptide selected from the group of peptides consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8 and SEQ ID NO:9.

5. (previously amended) A peptide according to claim 1 wherein the peptide is a cyclic peptide.

6. (previously amended) A peptide according to claim 5 wherein the cyclic peptide consists of SEQ ID NO 10.

7. (previously amended) A peptide according to claim 1 wherein the peptide is a synthetic peptide.

8. (currently amended) A peptide according to claim 1 wherein the antigen is ~~(pre)flaggrin~~ profilaggrin, and the peptide is reactive with a rheumatoid arthritis patient's autoimmune antibodies which are reactive with ~~(pre)flaggrin~~ profilaggrin.

9. (currently amended) A peptide according to claim 1 wherein the peptide is obtained by post-translational modification of ~~(pre)flaggrin~~ profilaggrin, separation of peptide fragments formed by post-translational modification and subsequent selection of the presence of a citrulline modified arginine residue in a peptide, which citrulline modified arginine residue was formed during the post-translational modification.

10. - 14. (withdrawn)

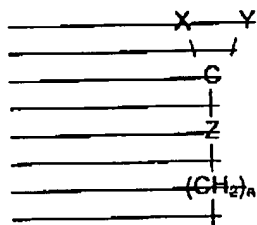
Ser. No. 09/308,150

15. (previously amended) A method for the detection of autoimmune antibodies in sera of a patient, comprising the steps of:

contacting a peptide according to claim 1 with sera of the patient; and  
detecting for the formation of a peptide and antibody complex.

16. (previously added) The method of claim 15, wherein detecting comprises use of an antihuman antibody.

17. (currently amended) A purified peptide consisting of about 24 or fewer amino acids reactive with autoimmune antibodies from a patient suffering from rheumatoid arthritis, wherein the peptide is derived from a contiguous stretch of amino acid residues encoded by mRNA encoding a filaggrin or profilaggrin antigen, the mRNA comprising a codon for at least one arginine residue, wherein in the peptide at least one arginine residue encoded by the mRNA is a citrulline residue. ~~in the peptide comprises a modified arginine residue with a side chain of the formula:~~



wherein

~~X is  $\text{NH}_2$ ,  $\text{CH}_3$ ,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$ ;~~

~~Y is  $\text{O}$ ,  $\text{NH}$ ,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$ ;~~

~~Z is  $\text{O}$ ,  $\text{NH}$  or  $\text{CH}_2$ ; and~~

~~n is 2, 3 or 4, on the condition that when  $\text{X} = \text{NH}_2$  and  $\text{Z} = \text{NH}$ , Y is not  $\text{NH}$ .~~

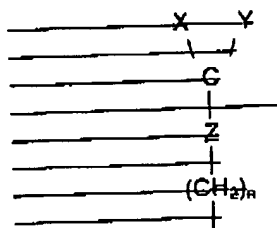
Ser. No. C9/308,150

18. (previously added) The peptide of claim 17 wherein the antigen comprises amino acids 306-324 of the C-terminal end of profilaggrin.

19. (cancelled)

20. (cancelled)

21. (currently amended) A purified peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:10, wherein ~~X~~ therein is a modified arginine residue with a side chain of the formula:



wherein

~~X is NH<sub>2</sub>, CH<sub>3</sub>, NHCH<sub>3</sub> or N(CH<sub>3</sub>)<sub>2</sub>;~~

~~Y is O, NH, NHCH<sub>3</sub> or N(CH<sub>3</sub>)<sub>2</sub>;~~

~~Z is O, NH or CH<sub>2</sub>; and~~

~~n = 2, 3 or 4, on the condition that when X = NH<sub>2</sub> and Z = NH, Y is not NH.~~

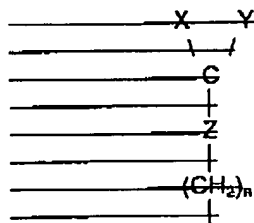
22. (cancelled)

23. (previously added) The peptide of claim 21 wherein the peptide is a synthetic peptide.

Ser. No. 09/308,150

24. (previously added) The peptide of claim 21 wherein the peptide is immunologically reactive in an immunological assay for detection of rheumatoid arthritis.

25. (currently amended) A cyclic peptide reactive with autoimmune antibodies from a patient suffering from rheumatoid arthritis, wherein the peptide is derived from a contiguous stretch of amino acid residues encoded by mRNA encoding a filaggrin or profilaggrin antigen, the mRNA comprising a codon for at least one arginine residue, wherein in the peptide at least one arginine residue encoded by said mRNA is a citrulline residue. ~~In the peptide comprises a modified arginine residue with a side chain of the formula:~~



wherein

~~X is  $\text{NH}_2$ ,  $\text{CH}_3$ ,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$~~

~~Y is  $\text{O}$ ,  $\text{NH}$ ,  $\text{NHCH}_3$  or  $\text{N}(\text{CH}_3)_2$~~

~~Z is  $\text{O}$ ,  $\text{NH}$  or  $\text{CH}_3$ ; and~~

~~n is 2, 3 or 4, on the condition that when  $\text{X} = \text{NH}_2$  and  $\text{Z} = \text{NH}$ , Y is not  $\text{NH}$ .~~

26. (previously amended) The peptide of claim 25 wherein the peptide is cyclicized through a cystine.

27. (Cancelled)

Ser. No. 09/308,150

Add the following new claims:

28. (new) A purified peptide reactive with autoimmune antibodies from a patient suffering from rheumatoid arthritis, wherein the peptide is derived from profillagrin or fillagrin or both, and wherein the peptide comprises at least one citrulline residue.
29. (new) The peptide according to claim 28 wherein the peptide is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8 and SEQ ID NO:9.
30. (new) The peptide according to claim 28 wherein the peptide is a cyclic peptide.
31. (new) The peptide of claim 30 wherein the peptide is cyclicized through a cystine.
32. (new) The peptide according to claim 30 wherein the cyclic peptide is SEQ ID NO 10.
33. (new) A method for the detection of autoimmune antibodies in sera of a patient, comprising the steps of:  
contacting a peptide according to claim 28 with sera of the patient, and  
detecting for the formation of a complex between said peptide and an antibody.
34. (new) The method of claim 33, wherein detecting comprises use of an anti-human antibody.

Ser. No. 09/308,150

35. (new) The method of claim 6, wherein detecting comprises the use of an enzyme-linked immunosorbent assay (ELISA).